

Response to Office Action Mailed July 16, 2004
Application No. 10/078,449
Attorney Docket No. 2089/42100 Case PA3 TMM

Amendments to the Specification:

Please amend the title of the invention as follows:

Disk data storage media with edge track data surface, ~~methods to manufacture, exploit and convert conventional disk media to that having an edge track data surface~~

Please amend the paragraph beginning on page 6, line 1, and ending on page 6, line 21 as follows:

Figure 1 shows schematically a typical disk management system configured as a horizontally aligned stack (2) of disk media. Often such a stack of disks is arranged in an annular configuration. Access to surface information on disks (1), such as title label (4) or bar-coded manufacturing information (5) is impeded by the narrow gap (6) between adjacent disks. The disks are generally held apart and supported by grooves or fingers (3). Disk media (7) according to the present invention comprise a disk having first and second disk surfaces and an edge surface (8) with at least one of the first and second disk surfaces and the edge surface being formed to store data. In the example of Figure 1, edge surface 8 is inscribed with data in the form of redundant barcodes (9) readable by barcode reader (10). Instead of redundant barcodes, disks (7) can be notched or otherwise indexed to pre-position the barcode for the reader. Such pre-positioning could be performed by the disk player assembly, or for example, by a device such as rotating wheel (11) which is positionable to contact and rotate the

disk to the desired position. Alternatively, wheel (11) could be used to rotate the disk so as to facilitate the read/write of bar-coded information on the edge data surface. Bar-code schemes and methods of exploiting them are known. Some examples are taught in U.S. Pat. Nos. 4,845,348; 5,056,429; 5,120,940; 5,382,776; 6,276,606; ~~6,351,203~~ 6,315,203 and 6,158,660. The use of magnetic inks in bar codes is taught in US Patent No. 6,324,353. Methods to locate index marks are also known. For example, US Patent No. 3,342,705 teaches how to locate index marks (a flat area or notch) on the edge of a semiconductor wafer to permit reliable positioning.

Please amend the paragraph beginning on page 7, line 11, and ending on page 8, line 4 as follows:

FIG. 3a shows the rough edge (16) of a disk (1) being abraded/polished by finishing device (17) so as to prepare edge surface (18) to act as a data storage surface. U.S. Pat. No. 5,986,982 teaches bonding two optical disks or surfaces (with a thickness half that of a normal optical disk), together to produce a high-density optical disk. This preparation step may be integrated into the manufacturing process or be applied to existing disk media. FIG. 3b shows the prepared edge (18) being layered by device (19) with a coating (20) to store data. Suitable coating methods and materials are known. U.S. Pat. No. 3,971,874 entitled "Optical information storage material and method of making it" teaches transparent substrates, an amorphous silicon layer and a protective coating. Amorphous materials employed in optical disks have two optical density states, a

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high and a low, which can be changed by electrical, optical or thermal energy. Such materials are disclosed in U.S. Pat. No. 4,064,531 entitled "Semiconductor device having a body of amorphous silicon" and are exploited further in U.S. Pat. No. ~~4,302,928~~ 4,202,928 entitled "Updatable optical storage media". Similarly, phase change materials for recording and reproducing information are taught in U.S. Pat. No. 6,288,997 entitled "Phase change optical disk media". Other film layers, coatings and optical disk surfaces useful for application to the prepared disk edge surface (18) of the present invention are disclosed in: U.S. Pat. No. 4,837,130 entitled "Optical disk manufacturing method"; U.S. Pat. No. 6,077,582 entitled "Optical disc, process for producing the optical disc and its manufacture apparatus"; U.S. Pat. No. 4,837,130 and U.S. Pat. No. 6,077,582 are further examples. Reproduction schemes are also taught in U.S. Pat. No. 6,298,138 with spin coating taught in U.S. Pat. No. 6,058,086 and U.S. Pat. No. 6,203,849. Additionally, U.S. Pat. No. 6,058,086 teaches layering techniques for various substrates, reflective coatings and protective layers for optical disks. The patents mentioned above are incorporated herein by reference.

Please amend the paragraph beginning on page 13, line 15, and ending on page 14, line 13 as follows:

It will be clear to a person skilled in the art that a variety of methods and materials are available to manufacture the new disk data storage media as contemplated herein as well as means to equip existing disk media with a data surface on its edge. Examples of materials, surface coatings, read/write

apparatus and manufacturing techniques known to be useful in association with disk media and are taught in the following patents: U.S. Pat. No. 3,971,874 entitled "Optical information storage material and method of making it", U.S. Pat. No. 4,064,521 entitled "Semiconductor device having a body of amorphous silicon", U.S. Pat. No. ~~4,302,928~~ 4,202,928 entitled "Updateable optical storage media", U.S. Pat. No. 4,616,237 entitled "Data storage medium", U.S. Pat. No. 4,998,238 entitled "Apparatus with multiple heads adjusted for optimum performance at different regions of optical disk", U.S. Pat. No. 5,251,193 "Solid state optical disk reader", U.S. Pat. No. 5,635,114 entitled "Method of making thin film optical storage media", U.S. Pat. No. 5,734,633 entitled "Optical disk recording and reproducing apparatus and method using an optical disk for recording information on lands and grooves", U.S. Pat. No. 5,881,044 entitled "Optical disk write/read apparatus and optical disk write method", U.S. Pat. No. 6,058,086 entitled "Method and apparatus for testing quality of an optical disk medium", U.S. Pat. No. 6,077,582 entitled "Optical disc process for producing the optical disk and its manufacturing apparatus", U.S. Pat. No. 6,091,700 entitled "Optical disk and optical disk fabrication method", U.S. Pat. No. 6,243,354 entitled "Optical disk having high recording density", U.S. Pat. No. 6,288,997 entitled "Phase change optical disk medium", U.S. Pat. No. 6,295,262 entitled "Method and apparatus for recording information onto optical disk" and U.S. Pat. No. 6,298,138 entitled "Optical disk, and optical disk barcode forming method, an optical disk reproduction apparatus, a marking forming apparatus, a method of forming a laser marking on an optical disk and a method of manufacturing an

optical disk". Those interested in related tracking and related data methods are referred to U.S. Pat. No. 6,219,197 entitled "Method and apparatus for servo positioning in a direct access storage device with a transducer read element width greater than {fraction (1/3)} and less than $V_{sub.2}$ the width of a data cylinder" and U.S. Pat. No. 5,926,337 entitled "Off-track correcting method disk apparatus and a disk apparatus using the same".